

ABSTRACT OF THE INVENTION

This invention relates generally to a novel CaM multi-functional protein kinase, which has been named Pregnancy Up-Regulated, Nonubiquitous CaM Kinase (PNCK), and to the nucleotide sequence encoding it. The kinase is temporally expressed during postnatal mammary development in a spatially heterogeneous manner in certain subsets of cells, and overexpressed in a subset of primary breast cancers. The invention further relates to an analysis of a correlation between carcinogenesis and postnatal development, particularly mammary development, especially associated with parity; as well as to methods of using the kinase, or gene encoding it, as markers, prognostic tools, screening tools and therapies, *in vitro* and *in vivo* that are based upon that correlation.